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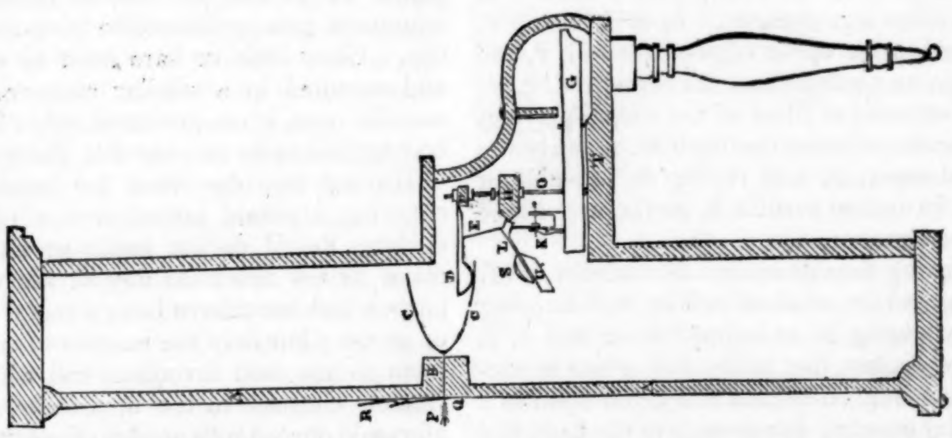
GURNEY'S IMPROVEMENTS IN MUSICAL INSTRUMENTS.



[From the Repertory of Patent Inventions.]

Specification of the Patent granted to GOLDSWORTHY GURNEY, *Esquire, of Bude, Cornwall, for certain Improvements in Musical Instruments.*—Sealed October 18, 1834.

Description of the Drawing.

In my said invention of certain improvements in musical instruments, that, instead of wire strings, straight rods, or strings, I employ glass, or metal bars or rods, whether of steel, iron, copper, brass, or of any other metal or compositions of metals, or alloys, which may be fit and proper for the purpose, and which said bars or rods I curve or bend at a certain point or points, which is or are equidistant from the ends of the said bars or rods, into the figure, shape, or form shown at C, C, in fig. 1, and secure it in front of a bridge or bar of wood or metal, B, glued to or affixed in front of a sound-board or resonant-board, A, A, (shown in section,) in the following manner. A hole is made through the bridge, B, and sounding-board, A, through which the two ends of a metal wire or string are passed, after having been bent over the centre of the bent bar or rod, C, to the back of the sound-board, as shown at P. A steel spring, Q, about six inches long, and an eighth of an inch square, is placed upright against the back of the sound-board, A, A, and the ends of the wire or string are twisted or tied together over it. One end of the spring, Q, is then drawn away from the sound-board, the other end still resting against it, until a sufficient tension or binding-action is produced by the wire, to affix the bent rod or bar, C, C, against the front of the bridge, B, when a wedge, R, must be introduced between this end of the steel spring, Q, and the sound-board, to preserve or continue a uniform tension, sufficient to prevent the bent bar or rod, C, C, from shifting its position, when struck by the hammer, in the manner now to be described. L, is a hammer hinged to a rail, H, and raised by a hopper, K, affixed on the end of the lever or key, G, and which said key is to be acted upon by the finger of a performer, in the manner of playing the piano-forte or organ, when the said hammer strikes the end of one leg of the rod, C, C. A piece of wood, U, is placed under the end of the hammer to give it weight, the size of which is regulated according to the size of the rods employed, at the will of the manufacturer, so as to bring out a tone most desirable in his judgment.

The head, S, of the hammer, L, is to be covered with cloth, soft leather, or which is preferable, with a layer of caoutchouc or Indian rubber, of about a sixteenth of an inch in thickness, or more or less, according to the taste of the manufacturer. The rail, H, is affixed between screwed nuts, upon the upper end of a screwed wire or rod, O, which is passed between the keys, and affixed to the key-board, T, of the instrument, in the usual way of piano-forte makers. If dampers, to shorten the time of vibration of the bars or rods, C, C, are required or desired by the manufacturer, they may be affixed in the following manner. D, is a damper, hinged to the upper edge of the rail, F, and shown as resting upon the bar or rod, C, C; it is elevated or lifted off the rod, in playing, by means of a connecting-rod, E, hinged to the damper, D, and resting in a notch or gap, formed to receive it, on the upper face of the hammer, L.

Having thus described the manner of affixing and the mode of striking and damping one vibrating or sounding-rod or bar, C, C, I now declare that every rod or bar in succession may be affixed and acted upon in a similar manner, downwards to the bass, and upwards to the treble, throughout the whole compass of the instrument; and which compass may be limited or extended, more or less, from six octaves. The size of the bent rods or bars, C, C, may be varied, in order to produce different qualities of tone, at the will of the manufacturer: the sectional form of them may be either round, oval, square, flat, or of any other shape or form required. These different sectional shapes afford somewhat different qualities of tone, either of which may be employed at the pleasure of the manufacturer. Those which I now employ, are made cylindrical, and about one quarter of an inch in diameter in the bass part of the instrument, and gradually becoming smaller and shorter towards the treble, terminating in about one-eighth of an inch in diameter. Their lengths depend on their sectional size, the kind of metal, and the pitch required. Those above described are steel, and about two inches and a half in length, in the highest note of the treble, and increase in length gradually towards the bass; the lowest note of which is about twenty inches long, the instrument having the compass of six octaves. The curvature or bending of each bar or rod, C, C, opening or widening towards the bass, more or less, according to the ear or taste of the manufacturer, or agreeably to the louder or softer quality of tone required. The rods or bars are tuned by filing their ends so as to shorten their lengths, by which means their tones become higher in pitch; or the tone may be flattened or lowered in pitch, by filing the heel or central point of the bend of the rods or bars, C, C, thinner.

The great improvement effected in this instrument consists in substituting curved bars or rods, C, C, for stretched or strained wires, tuning-forks, or straight bars, rods, or plates, as used in the various musical instruments, now or heretofore invented or in use. Glass rods or bars must be curved, and mounted in a similar manner to the metallic ones, when preferred, only they will be required to be increased in diameter.

Having thus described the manner of carrying my said invention into effect, I declare that I do not mean or intend to claim as my invention any of the various parts which may have been already known or in use; but only the manner of adapting them to my said invention, and which invention consists in the application of the aforesaid curved rods or bars of glass, metal, or alloys, or mixtures of metals, in the manner herein described, to the improving of musical instruments.—In witness whereof, &c. *Enrolled, April* 7, 1834.

[From the Journal of the Franklin Institute.]

AMERICAN PATENTS.

American Patents which issued in May, 1834, *with remarks and exemplifications, by the Editor.*

For *Softening Sheep-Skins and removing the Fleece;* Jonathan Mann, Amesbury, Essex county, Massachusetts, May 1.

Any required quantity of water is to be heated blood warm, and potash, to the amount of six pounds for every hundred skins, is to be dissolved in it. The skins, if dried, are to be soaked in this liquor for three or four days, a shorter period sufficing if they are green. When taken from the liquor, and well washed, they are ready for pulling.

At p. 339, there is an account of a patent for removing fur from skins, in which process, potash is employed. We have turned to one account only of the process previously followed, and that is under the article MAROQUIN, in the *Dictionnaire Technologique*, where, speaking of the objections to the use of lime, it is observed that, to lessen

them, "many manufacturers diminish its quantity, and substitute for it wood ashes, or common potash."

For a *Canal Steamboat;* Daniel W. Croker, city of Philadelphia, May 3.

In order to confine the boat within a proper width, and to prevent the washing of the banks, the paddle-wheels are to be placed one on each side of the stern port, in the after part of the boat, recesses being left for that purpose; this, it is said, will accomplish the first named object. The second is to be attained by giving the buckets of each wheel such an inclination as will cause the water to flow inwards, towards the keel of the boat.

The points claimed, are the making recesses for the wheels near to the stern of the boat, thus saving much room; and placing the paddles, or buckets, at such an angle as to throw the waves inside, thus preventing injury to the sides of the canal.

The situation chosen for the paddle-wheels, we think one of the worst in the whole boat, and we apprehend that the employment of oblique paddles, for throwing the water inward towards the keel, will produce little advantage; but little difference will be thereby produced in the swell, that being caused by the displacing of water by the boat, and its flowing in behind as it advances. If a boat is drawn by horses, the swell still takes place; and as regards the agitation produced by paddles, we think the twin boats, so frequently used, with a paddle-wheel between them, much better calculated to produce this effect; it will not, however, promote the object of making the boat narrow.

For a *Machine intended to put into operation a New Principle in Hydraulics;* Thomas Hutchings, Reading, Berks county, Pennsylvania, May 7.

Albeit we have paid some attention to hydraulics, and have read with much attention the description of this new machine, intended to operate upon a new principle, we have been altogether unable to keep pace with the patentee in his developments. This is the more to our discredit, as the drawing which accompanies the specification is sufficiently well executed to make its intention known to any one capable of comprehending it; and it also has the requisite references to its different parts. The machine, it is true, very much resembles some of those which are intended to move for ever, and to set at naught the inertia of matter, and the effects of friction; and, perhaps, our present obtuseness of perception may result from the entire incapacity, under which we have always labored, of perceiving how any one of this whole class was to operate.

We are not quite sure that we shall be able to give a clear general idea of the manner in which this machine is intended to be constructed; and as to its mode of operation, we have already said enough to forbid any expectation of our attempting an explanation of that.

The power of the machine is to be derived from balls of wood, or of some other substance which will float in water. At the lower part of it, there is to be a receiver, or vessel, which is to be kept filled with water. This vessel is represented as a vertical cylinder, from the centre of which rises a tube, or conductor, also filled with water, and through which the balls of wood are to rise to such a height as to be delivered into buckets on the vertex of a vertical power wheel. Within the receiver, or vessel, below the conductor, there are placed two cylindrical rollers, which revolve with their peripheries in contact, being carried by a band on the axis of one of them, which passes through the receiver. These cylinders are to be stuffed with some yielding material, that they may press together, so as to prevent the water passing between them, whilst, by their yielding, they are to allow the balls of wood to pass. The vertical wheel, of which we have spoken, is surrounded by buckets, or pockets, into which the wooden balls are to fall; in the drawing, these buckets are sixteen in number. Now, if the eight buckets on one side have balls in them, the wheel will tend to descend by their weight; each ball is, in turn, to fall out as it arrives at the bottom, and to run through a tube into the receiver, where, passing between the elastic revolving cylinders, into which it is to imbed itself, it rises by its levity through the tube, denominated a conductor, and is delivered, by a spout, on to the vertex of the wheel. There are contrivances to supply the water lost by evaporation, or by leakage; and the main wheel, by the weight of the wooden balls, is to give motion to the collateral parts

of the machinery, and to perform whatever labor may be assigned to it.

We are inclined to recommend to the inventor of this machine, in order to insure its operation, the appending to it of some one of the many patented "horse powers," as, without an addition of this kind, it will assuredly remain at a standstill.

For an *Apparatus for the relief of Procidentia, Prolapsus Uteri, &c.;* Amos G. Hull, M. D., city of New-York, May 7.

The Doctor states that he has discovered a new fact in surgery, namely, that a prolapsus of the womb, or other organ of the pelvis, can be relieved, or cured, by pressure made upon the belly. The instrument used by him, is in the general form of a truss for hernia, but the front pad is made much larger, and so as to press centrically upon the region to which it is applied. The description given is very full and distinct, and the instrument is well represented in the drawing. The claim is made to the apparatus, founded upon "the discovery of the fact, that properly directed pressure made upon, or against, the lower part of the belly, relieves, and often effectually removes, the falling of the womb, and many other maladies frequently connected therewith."

None but medical men are aware of the amount of suffering which would be prevented, should the facts be as stated by Dr. Hull; and, in that case every friend of humanity would rejoice to learn that his remuneration was commensurate with the benefits conferred.

For *Preventing Explosions in Steam Boilers;* Cadwallader Evans, Engineer, city of Philadelphia, May 8.

This patent is taken for "an improvement in the mode of applying the fusible alloy as a guard against explosions of steam-engine, and other boilers."

Those acquainted with the various devices which have been proposed, and adopted, for the prevention of explosions, know that a fusible alloy, which shall melt by the temperature of the water, or steam, before it rises so high as to be dangerous, has been applied in various ways, and that in France, its employment is legally enforced. As hitherto employed, it is liable to several objections, among which is the alteration which the alloy itself undergoes, by fusion in contact with atmospheric air; becoming thereby, to a certain extent, oxydized, and, consequently, having its fusing point changed. Another objection has arisen from the fusion of these disks giving a vent to the steam, through an aperture which could not be closed until the contents of the boiler had become cooled: a circumstance not only attended with delay, but sometimes pregnant with real danger, as the boat, deprived of the action of the engine, may be actually driven on shore. Both these sources of danger are guarded against by the invention of Mr. Evans, in a way which promises to be perfectly effectual, and some idea of which may be collected from the following claim:

"I have thus described two modes in which I intend to carry my improvement in the mode of applying a fusible alloy into effect, which improvement, I do hereby declare, consists in the employment of an air-tight tube, or vessel, to contain the alloy, by which it will be preserved from oxydation, or water, for a great length of time, and in which it can be used many times in succession for indicating a certain elevation of temperature, without the necessity of renewing it; avoiding thereby the inconvenience and danger incident to the modes heretofore practised in the employment of it. I therefore claim the using of such alloy in the manner, or upon the principle, herein set forth, whether the same be effected by means of an instrument constructed exactly in the form described, or in any other in which a similar effect is produced by analogous means."

The alloy, when in the solid state, sustains a weighted arm, by enclosing, and holding, a piece of metal attached to the end of a journal, which passes through the box; but when the metal fuses, the weighted arm, which is on the outside of the box, descends, and in doing so, gives notice, by opening a valve for the escape of steam.

The different modifications of this contrivance cannot be fully understood without reference to the drawings, which are perfectly descriptive.

[From the American Journal of Arts and Sciences.]

Bead Manufactory at Venice.—Venice! how much like the impressions of a fair vision are my recollections of that city and of the week I spent in it. *Dreamy* is the term for it, for its crowded yet noiseless thoroughfares, the constant gliding of gon-

dolas, its rich palaces, its dungeons, and even its history, are in character more like the fancy of a dreamer than a sober reality. It was a fiesta when I arrived there, and the three large banners were waving in the piazza of St. Mark's; while close by it a temporary bridge of boats, some hundreds of yards in length, was filled with crowds in gay dresses hurrying to or from the church whose saint claimed the day. I recollect also particularly, one evening, I was seated under the high arcade that lines three sides of the piazza of St. Mark's; the gay shops and coffee-houses were brilliantly illuminated, the piazza was filled with company; in the centre a band of forty musicians were performing; I had an ice-cream before me and the last number of Gallignani in my hand, and I thought the situation as luxurious an one as I had ever occupied. Among the objects that help to make up the splendor of this piazza, probably the most magnificent in the world, the bead shops first attract the stranger's attention; I was so much interested by them that I determined to visit the Island of Murano where the beads are made, and, as the process was new to me, a notice of it may also be gratifying to some of your readers. Suppose Dr. T. then and myself reclining upon the soft cushions of a gondola, the blinds of its pretty little chamber drawn so as to admit just the requisite degree of light and air, and gliding along the canals with a kind of rocking motion, sufficient only to let us know that we were moving. We stopped a few minutes to examine the church of St. John, on one way, and soon after found ourselves at the skirts of the city, and before and on each side of us a wide expanse of water, dotted in all directions with villages and groves rising apparently from the waves. Among them and distant about a mile and a half, we distinguished the village of Murano, covering an island of that name, or rather islands, for like all others here, it is cut up in all directions by canals. The bead manufactories occupy a range of houses immediately on the left as we entered; that for mirrors is within an enclosure on the right: but as we were not there on one of the days in which it is in operation we did not visit it; indeed the establishment has fallen very much into decay. The bead manufactories however presented a busy scene. In the first to which they conducted us we found a large reverberatory furnace in the centre, with a basin of liquid vitreous matter. A workman put in the end of an iron rod, and whirling it slowly around, until a sufficient quantity of matter had attached itself, he withdrew the rod and formed the mass into a rude hollow cone about six inches in diameter, the apex being attached to his rod. Another workman had been doing the same thing at an adjacent opening, and the bases of the two cones being now brought together and united, a quantity of air was thus enclosed. As soon as the junction was perfected, they carried the mass to one side of the chamber, and here strips of wood were laid cross-wise along a passage, and each one holding his rod in hand they began to walk rapidly in opposite directions. As they did so, the glass drew out, and in less than a minute we had a tube of uniform bore and about one hundred and fifty feet in length. This one was of about the thickness of a quill; for the smallest beads they increase the pace to a pretty rapid trot. When a sufficient number of these tubes are formed, they are broken into lengths of about twenty-seven inches, and are then carried to an adjoining building called the assorting house. Here they are assorted, the workman being able from the feeling only, to arrange them in different boxes according to their thicknesses and colors. From this house they are now carried to another where the laborers are mostly women and boys. Each one is seated in front of a kind of little anvil, having in the right hand a thin plate of steel, nearly triangular in shape and with a blunt edge: in the left he takes as many of the tubes as will form a single layer between the thumb and fore finger, and advancing their ends against a measure on the anvil, by a dexterous use of the steel, breaks off from each tube a piece of sufficient length for a bead. The bits fall into a box, and are about twice as long as the thickness of the bead, (if a common one) is intended to be.

The next operation I thought the most interesting one. The boxes are carried into a large chamber with a furnace in the centre of it. A substance which I took to be ashes is moistened and made into a paste, and the bits of tubes are worked about in it until the holes are completely filled; they are then put into a sheet iron cylinder about eighteen inches in length and a foot in width, with an iron handle to

it, and about twice as much sand being added, the cylinder is thrust into the furnace and subjected to a rotatory motion. In a short time, the glass becomes soft and yielding: the paste in the holes keeps the bits from being compressed, and from an elongated they assume a spherical shape: when this is done, the paste is worked out by the sand, and the latter penetrating into the holes, the hard, sharp edges, are rounded and smoothed, and the heads are soon brought to the shape in which we see them in the market. When cooled, the sand is sifted from them, and after being rubbed in a cloth for the purpose of brightening them, they are fit for use.

The quantity manufactured is very great. They are worked up into ladies' bags, sashes, watch-guards, shawls, and even caps, &c., and as these are tastefully displayed, a bead shop along the piazza of St. Mark's is a very pretty object.

Spectacle Glasses.—Going along an obscure street one day, my attention was attracted by some curious fixtures in a shop, and on going in, I found they were preparing spectacle glasses. One set of the apparatus may be taken as a specimen of all. It consisted of a hemisphere of stiff putty, with another concave one of lead to fit on to it: the latter having its surface sprinkled with emery or some such article. The glasses having been first cut of the proper shape, and having had their sharp edges taken off, were pressed into the surface of the putty, and the leaden hemisphere was made by the hand to move rapidly over, both vertically and horizontally. In a short time, they were worked down so as to form a part of the smooth surface of the hemisphere: and the other side having undergone the same operation, the process was completed. Their convexity was thus, of course, uniform, a primary object in glasses of this kind. For concave glasses, the hemispheres were simply reversed.

The following instances of remarkable application and acquirements, at a period in life when most people believe the age for learning to be passed, will be of use to those who act as though their school-boy days were the only days for learning from books. There is, in our opinion, no period of life in which mechanics can derive so much benefit from reading, as when they are engaged in practical operations, in which their *interest*, as well as their reputation is at stake.

The Progress of Old Age in New Studies.—Of the pleasures derivable from the cultivation of the arts, sciences, and literature, time will not abate the growing passion; for old men still cherish an affection and feel a youthful enthusiasm in those pursuits, when all others have ceased to interest. Dr. Reid, to his last day, retained a most active curiosity in his various studies, and particularly in the revolutions of modern chemistry. In advanced life we may resume our former studies with a new pleasure, and in old age we may enjoy them with the same relish with which more useful students commence. Professor Dugald Stewart tells us that Adam Smith observed to him, that "of all the amusements of old age, the most grateful and soothing is a renewal of acquaintance with the favorite studies and favorite authors of youth—a remark, which, in his own case, seemed to be more particularly exemplified while he was reperusing, with the enthusiasm of a student, the tragic poets of ancient Greece. I heard him repeat the observation more than once while Sophocles and Euripides lay open on his table."

Socrates learned to play on musical instruments in his old age; Cato, at eighty, thought proper to learn Greek; and Plutarch, almost as late in life, Latin.

Theophrastus began his admirable work on the Characters of Men, at the extreme age of ninety. He only terminated his literary labors by his death.

Peter Ronsard, one of the fathers of French poetry, applied himself late to study. His acute genius, and ardent application, rivalled those poetic models which he admired; and Boccaccio was thirty-five years of age when he commenced his studies in polite literature.

The great Arnauld retained the vigor of his genius, and the command of his pen, to his last day; and at the age of eighty-two was still the great Arnauld.

Sir Henry Spelman neglected the sciences in his youth, but cultivated them at fifty years of age, and produced good fruit. His early years were chiefly passed in farming, which greatly diverted him from his studies; but a remarkable disappointment respecting

a contested estate, disgusted him with these rustic occupations; resolved to attach himself to regular studies, and literary society, he sold his farms, and became the most learned antiquary and lawyer.

Colbert, the famous French minister, almost at sixty returned to his Latin and law studies.

Tellier, the chancellor of France, learned logic, merely for an amusement, to dispute with his grand-children.

Dr. Johnson applied himself to the Dutch language but a few years before his death. The Marquis de Saint Aulaire, at the age of seventy, began to court the Muses, and they crowned him with their freshest flowers. The verses of this French Anacreon are full of fire, delicacy, and sweetness.

Chaucer's Canterbury Tales were the composition of his latest years; they were begun in his fifty-fourth year, and finished in his sixty-first.

Ludovico Monaldesco, at the extraordinary age of 115, wrote the memoirs of his times, a singular exertion, noticed by Voltaire, who himself is one of the most remarkable instances of the progress of age in new studies.

The most delightful of auto-biographies for artists, is that of Benvenuto Cellini; a work of great originality, which was not begun till "the clock of his age had struck fifty-eight."

Koornhert began at forty to learn the Latin and Greek languages, of which he became a master; several students, who afterwards distinguished themselves, have commenced as late in life their literary pursuits. Ogilby, the translator of Homer and Virgil, knew little of Latin or Greek till he was past fifty; and Franklin's philosophical pursuits began when he had nearly reached his fiftieth year.

Accorso, a great lawyer, being asked why he began the study of the law so late, answered, that indeed he began it late, but should therefore master it the sooner.

Dryden's complete works form the largest body of poetry from the pen of one writer in the English language; yet he gave no public testimony of poetical abilities till his twenty-seventh year. In his sixty-eighth year he proposed to translate the whole Iliad; and the most pleasing productions were written in his old age.

Michael Angelo preserved his creative genius even in extreme old age; there is a device said to be invented by him of an old man represented in a *go-cart*, with an hour-glass upon it; the inscription *Ancora impara!*—YET I AM LEARNING!

We have a literary curiosity in a favorite treatise with Erasmus and men of letters of that period, *De Ratione Studii*, by Joachim Sterck, otherwise Fortius de Rhingelberg. The enthusiasm of the writer often carries him to the verge of ridicule; but something must be granted to his peculiar situation and feelings; for Baillet tells us that his method of studying had been formed entirely from his own practical knowledge and hard experience; at a late period of life he commenced his studies, and at length he imagined that he had discovered a more perpendicular mode of ascending the hill of science than by its usual circuitous windings. His work Mr. Knox compares to the sound of a trumpet.

Menage, in his Anti-Baillet, has a very curious apology for his writing verses in his old age, by showing how many poets amused themselves notwithstanding their gray hairs, and wrote sonnets or epigrams at ninety.

[*Curiosities of Literature.*]

[From the London Mechanics' Magazine.]

PROOFS THAT FLAME IS HOLLOW.

Sir,—The accompanying are submitted as illustrative proofs of the hollowness of flame, as they show, in a very evident manner, that such really is the fact.

Fig. 1.

Fig. 1 is the shadow of a burning lamp thrown upon white paper by the reflected rays of the sun, the direct rays being usually too strong for the purpose. The shadow marks in a very distinct manner the extent of the flame all around, and shows the transparency occasioned by its hollowness; in this experiment the ascending columns of heated air and smoke are also shown in a very pleasing and satisfactory manner.

Fig. 2.

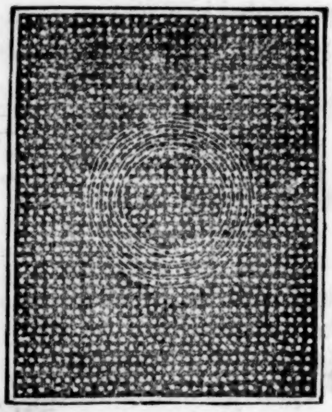


Fig. 2 is a piece of perforated paper, which has been used to resist the passage of flame in the experiment described in the Mech. Mag. vol. xxi. p. 328. The paper has been removed immediately on the commencement of the scorching process, the mark made by which delineates very prettily the action of the ring of flame which surrounds the wick of the lamp, while the centre of the paper remains untouched.

Some persons may attach less importance than I do myself to these modes of proving that flame is hollow, but I think they exhibit in a tangible and novel manner some of the facts already so ably and fully explained by Mr. Rutter, and other of your talented correspondents.

I remain, Sir,
Yours respectfully,
Wm. Baddeley.

London, Sept. 18, 1834.

[From the New-York Mirror.]

Ingenious Mechanism.—Among his attractions for the holydays, Mr. Peale, of the Museum in Broadway, has lately opened an exhibition of extraordinary mechanical contrivances, that are quite as incomprehensible, beautiful and interesting, as Kempelen's celebrated automaton chess-player, which, notwithstanding the ingenious theories of Freyhere, Brewster, and others, remains to the majority of beholders and readers, as great a puzzle as ever. The exhibition consists of several automata; one, an image of a boy, kneeling before a desk, on which it executes four beautiful pieces of writing in French and English, and three drawings. Another is a magician, who appears seated at the foot of a wall, holding a wand in one hand and a book in the other. A number of questions are inscribed upon oval medallions, from which the spectator selects any one he chooses, and having placed it in a drawer, which then shuts with a spring, the figure rises to its feet, bows its head, consults its book, and describes circles with its wand. After seeming to ponder for a short time upon the question, it strikes the wall above its head with the wand, when two folding-doors fly open, and the answer is displayed. The doors then close, the figure resumes its seat, and the drawer opens to return the medallion. Some of the medallions have a question upon each side, either of which is answered when the side containing it is placed upward. If the drawer is shut without a medallion, the figure shakes its head without rising, and the drawer returns; if two medallions are deposited at once, an answer is returned only to the lower one. The mystery of this contrivance is, how the machinery selects the appropriate answer to the question chosen; it has been supposed that the secret is in the different weights of the medallions, but the fact that some of them have a question on either side, shows this to be impossible. The third automaton is a rope-dancer, who performs all manner of leaps and gyrations, by the agency of an immense mass of machinery. Another is the figure of a lady playing on an organ; moving her arms, head, hands, eyes and fingers, in admirable mimicry of life—pressing the pedals with her feet—and withal, producing very tolerable music. Not the least remarkable among the performances of this figure, are the regular and natural rising and falling of the chest, as in the act of breathing. All these figures are set in motion by amazing quantities of delicate and complicated machinery, contained in large boxes or chests, splendidly ornamented, on which the automata are placed. The exhibition includes, however, a number of isolated figures, which perform their movements by the action of mechanism contained within themselves. There is a spider, exquisitely wrought in fine gold, that runs upon a table, moving its legs in exact imitation of the living insect; a mouse, a lizard, and a serpent, also of gold, which run, dart, and crawl, moving their heads and bodies with perfect fidelity to nature. Besides these, there is a superb golden snuff-box, from which springs a lovely little bird, scarcely an inch in length, that turns its tiny head, opens its bill, flutters its splendid wings of azure, and warbles a delicious morsel of fairy-like music. Last of all and least perfect, but yet most won-

derful of all, is a human figure, about twelve inches in height, which *walks upon the table*, entirely by the power of its own mechanism. The walk is indeed nothing more than a slow and somewhat awkward shuffle, but still the legs move and the figure advances. The very imperfection of the movement shows its almost insurmountable difficulty. How the centre of gravity is maintained, is an inconceivable wonder; the feet are not loaded—on the contrary they, as well as the legs, are hollow; and the greatest weight, as in the human figure, is in the body and the head—yet the automaton does not fall. The exhibitor removes the drapery at the back of the figure, and shows that it is one entire and bewildering collection of chains, wheels, pinions, springs and levers; and all this wilderness of mechanism—the work of years—is required to produce an imperfect imitation of the simplest human movement; one that we perform almost unconsciously, and without even bestowing a thought upon the means by which it is effected!

Electro-Magnetism.—The largest and most powerful electro, or galvanic-magnet we have ever seen, has recently been made and fitted up by Mr. Chilton, chemist in Broadway, for the military academy at West Point. It consists of a stout wooden frame, (two uprights and a cross-piece,) about five feet high, and three in diameter, from the top of which is suspended the magnet—a piece of soft iron, somewhat resembling a horse-shoe in shape, and weighing nearly eighty pounds. To one of the uprights is attached a sliding platform, on which is placed a glass jar, containing about two gallons of acidulated water, (or diluted acid,) and above this is suspended the battery, consisting of three concentric cylinders, of sheet zinc and copper, disposed alternately, one within another; they are about a foot long, and the outer or largest cylinder is some six or eight inches in diameter. The communication between this battery and the magnet, is effected by a number of copper wires, altogether about a thousand feet in length, which, proceeding from the cylinders, are closely wound upon the latter, and then covered with silk, to isolate their surface from the atmosphere. The effect of this by no means complicated apparatus is amazing. The moment that the sliding platform supporting the jar of diluted acid is raised so as to immerse the cylinders in the fluid, and thus generate the galvanic action, an iron slab, held at the distance of an inch or more below the extremities of the magnet, is irresistibly drawn up to it, with a loud clash, and an impetus like that of a cannon-ball; the strength of a dozen men could not tear it away. Fifteen hundred pounds were suspended from this slab, without moving it any more than if it had been a part of the mass to which it clung. It was one of the most extraordinary exhibitions of chemical power we ever beheld, and we could not but marvel in reflecting that by means so simple as a few square feet of sheet zinc and copper, and a pound of acid, a force so tremendous should be called into action, with the speed of lightning. To show still more forcibly the immense effect of the galvanic battery, Mr. Chilton removed the cylinders, and in their stead attached to the connecting wires two small plates, one of zinc, the other of copper, neither of them larger than a shilling-piece, and when these were immersed in the diluted acid, the magnet sustained a weight of *thirty-three* pounds! The power obtained by this apparatus may be increased indefinitely, by enlarging the magnet and the cylinders; if these could be constructed of sufficient size, a weight equal to that of the earth itself might be sustained. Not the least curious fact respecting these electro-magnets is, that although the attracting power ceases when the cylinders are withdrawn from the jar, it may be *permanently communicated* from the galvanized magnet to another, while the former is in operation; and it is in this way that the common magnets are constructed.—*Ib.*

[From the London Mechanics' Magazine.]

Means of Preventing Anchors from Driving.—Sir: We often hear of ships being driven on to a lee-shore, in consequence of their anchors not holding, either from the too great hardness, or, more frequently, the softness of the ground. From the latter cause, I have seen several vessels stranded in the Bay of Naples, and in that of Toulon. I have often turned my thoughts towards the finding of a remedy for this evil; but no modification of the structure of anchors that I have seen, or can devise, appears to be of any avail. Not long since I had an opportunity of trying some experiments with a barge on an inland canal, with seven feet water, and a bottom of soft black mud. I

used a chain, and a small anchor or "grappling," of the size usually employed in such barges. Taking advantage of the wind being in the direction of the canal, casting in the anchor, I set up a sail, and the barge was propelled astern, dragging the anchor through the mud. When the barge had once began to move, its way became rapidly accelerated, in consequence of the anchor being lifted out of the mud, and sliding more upon its surface. I then took some iron weights, and making a coil of hoop iron, or of small bar iron, attached to it a weight, and put it on to the chain, as a key or a seal is put upon a split ring. The weight sliding down to the anchor, brought up the barge; or if one did not suffice, I sent down another.

Now, sir, it strikes me, that a ship of any size, situated as above supposed and instanced, would have the means of arresting the "driving" of its anchors, by having recourse to an expedient of the nature I propose. With respect to men-of-war, a few of their guns might be quickly made available to the saving of the vessel. Most merchantmen are provided with two or four guns; and when they have none they might send down the caboose, or strong hogsheads full of ballast or of coals. When the bottom is mud, sacks would do as well as hogsheads.

Should you condescend to give a place in your valuable work to this crude communication, both you and I may perhaps, one day or other, have the satisfaction of hearing that it has produced some good.

I have the honor to be,

Sir, your obedient servant,

F. M.

London, October 26, 1834.

Mr. Perkins' Heating Apparatus.—Sir,—In the Mechanics' Magazine of the 26th instant, a communication appeared, signed "J. Murray," which condemns an improvement for heating, which has been patented by me: I beg, therefore, you will do me the favor to insert the following reply.

Mr. Murray hopes that he "shall not be stigmatized as an enemy of discovery and improvement, if he does not recommend what he cannot conscientiously approve." He then attributes to the invention a property which it does not possess, and frightens himself with the apparition.

He says that ne cannot be satisfied that, if pipes charged with "*red hot*" water should accidentallv ourst, tne danger would be trifling. Had Mr. Murray inquired of me, I could have proved to him how absurd is the supposition, that *red hot water* can be made to circulate in iron tubes under pressure. For I would ask Mr. Murray what must be the thickness of *red hot iron tubes* to resist a pressure of one thousand atmospheres, which is about the calculation for water heated to nine hundred degrees Fahrenheit?

The fact that water of that temperature must be confined in a tube made of material of sufficient tenacity, when red hot, as to resist such a great pressure, is enough to show the impracticability of circulating water at any thing like that degree of heat.

But let us suppose that we had a material which would contain water of the temperature of eight or nine hundred degrees, and that the tube under that pressure and heat were to burst, what would be the temperature of the water one foot from the fissure?

Has Mr. Murray yet to learn, that the higher the temperature of water within the tube, the more suddenly is the heat abstracted when allowed to come in contact with atmospheric air, and consequently that the water would not scald? If, however, he will call at the National Gallery of Practical Science, he may at any time see this fact exemplified, and with perfect impunity hold his hand in steam, which issues from the generator of the steam-gun, at a pressure of thirty atmospheres, and a temperature of 450 degrees. So much for the danger of small tubes, supposing they do burst.

Having thus disposed of the absurd idea that we circulate *red hot water*, I will endeavor to show that, notwithstanding we calculate for heating our pipes to 350 degrees, there need not be any oxydation. For this is completely prevented by covering the exposed pipe with a coat of Brunswick black.

But Mr. Murray will be better satisfied by examining facts. I can refer him to situations where pipes have been at work three years, subject to all the atmospheric influence to which he alludes, and yet no perceptible deterioration has taken place, either internally or externally. No one will deny that wrought iron will rapidly decompose, if not properly protected. In fact, I believe common gas-pipe, when in the damp ground, will only last twelve years before it must be renewed. This, however, is subject to wear internally as well as externally. But pipes used for heating purposes, need

not be exposed, and therefore can easily be protected.

If Mr. Murray had examined the subject previously to submitting his opinion to public observation, he would have saved himself the mortification of having done his best to retard the progress of a discovery which has obtained too great an impetus to be stopped.

It is fortunate that noblemen and gentlemen of fortune attend now more than they formerly did to matters of science. This it is that gives encouragement to practical experimentalists, and enables them to produce results to which they would never arrive were they entirely dependant upon such doubtful encouragement as is given by Mr. Murray.

Thus it was with the introduction of gas. A chemical lecturer of the day said that gas could never be used for lighting the streets —it was dangerous, &c. However, thanks to a spirited community, we are now in full possession of the luxury.

The time will come also, when Mr. Murray will acknowledge that not only will our houses be warmed by pipes hermetically sealed, but our bread will be baked, our coffee roasted, and many other things which are now imperfectly done, without the least apprehension from the *bugbear* pressure.

I am, Sir,
Your obedient servant,
A. M. Perkins.

October 29, 1834.

THE RIGHT EMPLOYMENT OF WEALTH.

"A man of overgrown wealth may be allowed to spend it in any way he pleases, as the greatest injury he can do society is to hoard it."—*Mr. Loudon—Enc. of Cottage, Farm, and Villa Architecture.*

Sir,—The above text is the representative of certain crude notions which pervade a large class of well-meaning people, and it is therefore a fitting subject for analysis, in order to explode it if unsound, or to work it out if sound; for when a man like Mr. Loudon gives his sanction to an opinion it carries weight with it, and when of importance, must do either much good or much harm. The case in question is the erection of Arundel Castle by the Duke of Norfolk, who thereby circulated his wealth.

The first position we have to settle is, what *is wealth?* The answer must be, all things physical and mental, which tend to the *weal*, *health*, or welfare of the holder of the wealth. Therefore, the actual use of the matters in question, on the part of the holder, must be taken into the account, or they cannot promote his *weal*. If a horse be the owner in question, his *wealth* must consist in pasture and water, hay, corn, and straw, with occasionally a warm stable, and abundance of pleasant space for exercise. If he have *enough* of all these things, his *weal* would be in no way increased by doubling them, unless, indeed, a companion or companions were placed with him, thereby to increase his comfort by the exercise of his social qualities. To secure the comfort of the horse and his companions, it is therefore necessary that their joint *wealth* be equal to the wants of all. To give them more than that amount, would be as superfluous as to gild their oats, or to build them marble palaces. Horses are not provided with forethought, consequently being devoid of anxiety, they have no tendency to *hoard*. But human beings, provided with forethought, have anxiety; and though they may have enough *wealth* for the *weal* of to-day, they are not at ease unless they can store up for to-morrow, and many more days; in short, unless they can store up many fold the amount which they can use, to guard against the possibility of destitution. Amongst the most savage of the human race, forethought is the least active; some of them are contented with the coarse, spontaneous productions of the earth, gathering them as they want them; others store them up in small quantities. In civilized life, the greatest hoarders are those of weak minds, who, possessing abundance of forethought, yet lack the judgment to calculate circumstances truly. Consequently they work constantly and hardly, and consume sparingly. The results of their labors are mostly consumed by others. In uncivilized life, almost the only *wealth* which human beings can use consists of provisions, and as these provisions, for the most part, only last through the year, the amount which is worth hoarding is very limited. In civilized life, on the contrary, there is a representative of provisions—viz. money—and therefore the power of hoarding is unlimited, *i. e.* people can grow a great quantity of provisions, or make works of art, and sell the surplus for money. But the value of the money can only consist in its applicability to exchange for provisions, or works of art, at a future time. A man has grown a quarter of corn more than he can eat in

the year. He therefore gives it to another man, for an acknowledgment either in metallic or paper money; which acknowledgment means, that he will have his quarter of corn returned to him at a future time. Now it must be quite clear, that the money itself is not actual *wealth*, but only the representative of prospective wealth. If the wealth itself—the quarter of corn—were not produced in the following year, or any succeeding year, the money could be of no value; it could not conduce to the holder's *weal* by the purchase of corn. Supposing the word corn to represent provisions generally, the man might be starved to death in spite of his money. As for other objects of value, such as works of art, they can only be of a secondary value. Food is the base, and art the superstructure of human enjoyment. Take away the food, and nothing can have any value, so far as living beings are concerned.

Now, when Mr. Loudon talks of "a man of overgrown wealth hoarding it," he must mean by *wealth*, money, *i. e.* the representative of wealth; for, of course, he cannot mean that any landholder, or householder, hoards up houses, or land, or corn, or cattle, or, in short, either provisions or other articles of utility. That a landholder or householder may like to increase his capital to an unlimited amount, is perfectly probable, because he may be induced by two motives—the weakness which cannot see the extent of capital necessary to guard against the possibility of privation—or the extreme love of the power which money confers, which power he may use either tyrannically or benevolently, according to the tendency of his nature. Now it happens, that money itself is just as much an article of commerce as the things it represents. It is lent out at interest, in which way it is made productive, just as seed is when put in the earth. Mr. Loudon will not assert that people of capital make a practice of hoarding their money, except perhaps, some few eccentric, half-witted beings. When a landholder of large means receives his rents, he does not put them in a chest: he either buys property with them, or lends them at interest. But those to whom he lends them cannot pay the interest, unless they employ the money in some profitable business. Rothschild lends money at interest; while Lord Grosvenor, who bears the reputation of a hoarder, builds houses, and gets a better interest in the shape of rents. If Lord Grosvenor were to build houses, and then not suffer them to be occupied, or were he to buy land, and then not suffer it to be cultivated, he would be really a hoarder; and if he were to carry this on to an extent mischievous to the public weal, the nation at large would be justified in treating him as a lunatic, and placing his property in hands better calculated to make it fructify. But if he were to receive his rents annually, and annually hoard them, and thus gradually become the possessor of all the metallic coin in England, I do not see how the "hoarding would do injury to society," except by the example of the selfish or foolish spirit in which it might be practised. If the precious metals were utterly to disappear by such a process, and the bank-notes were to accompany them, ploughing and sowing, and buying and selling, and chair and table making, would assuredly go on notwithstanding, and some new circulating medium would be provided to facilitate commerce.

In the case of Arundel Castle, a positive mischief was done. A large quantity of good material was wasted, and a large quantity of men's time misemployed. No utility was the result, except the amusement of a foolish aristocrat. If it be alleged that a large number of workmen were maintained in employment by him, the answer is, that they had better have been maintained in idleness, than have been employed to waste material, and pervert other people's taste. If the necessity of keeping up habits of industry be used as an argument, then the answer is, that the simple process of digging holes, and filling them up again, would have answered every purpose.

The public mind is at present in a very excited state on the subject of railroads. Some of these railroads are, it is true, highly useful and economical, but they are only economical in virtue of their being useful. Take away their use and they become a positive waste. Many of the railroads now planning and executing by quacks and jobbers are in this precise condition, and therefore the morbid excitement of the public mind requires allaying by the process of reasoning. Shares have been bought and sold in South American mines which have never existed, and in many cases of actual existence the mines were about as valuable for all purposes of profit, as though they had been located in the moon. Now, it is

quite clear, that a railroad of no use, which is executed in England, is, in a national point of view, rather more wasteful than a gambling in shares of a supposititious mine; because, in the former case, material is wasted as well as time, in the latter, time only. "Ah!" exclaim the anti-hoarders, "but only think of the employment given to laborers —without the railroad they would have had no work!" Not so, good anti-hoarders! The men must be fed somehow or other, whether they work or not; and if they do work, the best work is that which is most useful; the next best, that which is least mischievous. It is far better to dig holes and fill them up again, than to waste material in the construction of useless railroads.

Should Mr. Loudon disagree with me in this view of the matter, I shall feel obliged to him to state "how otherwise," as the Chancery bills have it.

I remain, Sir, very truly yours,

Nov. 10, 1834. JUNIUS REDIVIVUS.

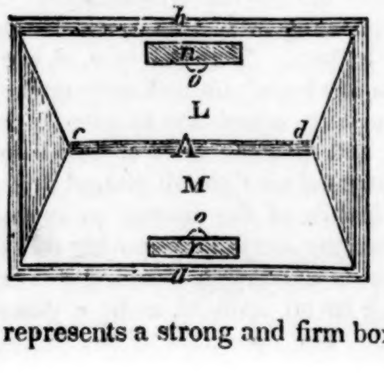
[From the American Journal of Arts and Sciences.]

THEORY OF THE BELLOWS; BY H. STRAIT.

TO THE EDITOR.

Dear Sir,—I here send you a communication on the true theory and practice of constructing, moving and using bellows; or, of exhaustion and compression or condensation of air on the principle of a balance, which I have lately discovered, and which promises, in my estimation, to be a valuable and powerful acquisition to practical blowing, desiring you to give it an immediate publication, as I am now engaged in giving it a thorough experimental demonstration. I will now proceed to illustrate the principles of my theory of exhaustion and compression of air, by representation and description, first, of compression, then of exhaustion, and conclude with some general remarks on its advantages, &c.

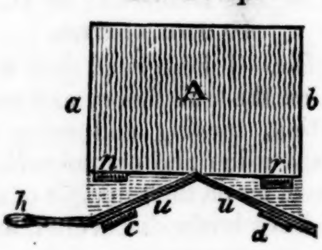
Compression Bellows.



A, represents a strong and firm box, four feet square, two of whose sides *a*, *b*, are a foot deep each; and its other two sides *c*, *d*, two feet deep at their centre, and from thence tapering down, even with the sides *a*, *b*. L, M, represent the bottom of this box, which is fastened air-tight to the tapering sides *c*, *d*, and the others *a*, *b*. This box, when constructed, will resemble an inverted roof with a small portion of the sides of the building attached thereto, and its bottom the ridge. In the two sides of the bottom L, M, are to be inserted two valves *n*, *r*, one in each, four inches by eight, which are to open upwards into this box, from ten to twenty degrees. These valves *n*, *r*, must be hung as near to the sides *a*, *b*, as they conveniently can. *o*, *o*, represent the sides of the valves *n*, *r*, hung to the bottom. A strong cover is now to be made, that will exactly cover over the top of this box, or even more; and we must provide a strong strip of leather, or some other very strong and flexible substance impervious to the air, four feet wide, and nearly seventeen long, with its ends tightly sewed together, which is to be fastened air-tight, first around the tops of the sides *a*, *b*, *c*, *d*, of the box A, and then around the sides of the cover. This will form the cistern into which the air is to be compressed, or condensed, and from which it can be let out in any direction required, or with any velocity. Immediately under this cistern, and directly under the valves *n*, *r*, in its bottom, a strong board, one foot wide and four long, is to be exactly balanced across its ridge, and hung by means of staples, hinges, or otherwise, so as to move easily upwards and downwards, and without wavering. On one end of this board, a handle to move it is to be attached, which can be of any length required. Holes are to be cut for valves, through each end of this board, of nearly the same size of those in the box A, and so as to be directly under them. Valves are to be hung over these holes so as to open and move just the same as those in the bottom of box A. This being done, the sides of this board and the box A, are to be connected by some impervious and strong substance, such as leather, fitted on air-tight, and so as to allow the balancing motion of the board. The box A, or air cistern being now, in some way or other, made fast, so as to allow the free balancing of this board, all is ready for operation. The handle attached to the balancing board, being now

moved, or raised and depressed powerfully, it will open and shut the valves, alternately, on each side of the ridge of the bottom of the box A, and consequently alternate partial vacuums will be formed, into which the adjacent air will rush, and from which it will be forced into the air cistern, where it can be compressed to any degree. When the handle which is attached to one extremity of this valved and balancing board is raised, the valve between it and the ridge closes tight, and forces all the air inside between the valves into the air-cistern, through the valve over, which likewise opens upwards; while on the opposite side of the ridge, the valve in the air cistern closes tight, to hold what air is in; and the valve below it opens to let air between the valves, which will be forced into the cistern, when the handle is brought down. The cistern of this compression bellows, especially if very large, instead of being filled full by the sole motion of this balancing board, may be nearly immediately filled, by having a staple clenched through the middle of its cover, and a rope attached to that, and then run over a fixed pulley, so that as fast as the cover is raised by pulling the rope, the cistern will fill, as all the valves will open up merely by the pressure of the atmosphere; and when it is thus filled, the balancing board can be moved so as to give the air drawn in, any pressure. Instead of having the bottom of the cistern roofed or ridged, for the purpose of balancing the board across, it can be flat, and then the board must be bent at the balancing point, each way downward, or being hung immediately by its middle to the bottom of the cistern, its extremities must be gradually and sufficiently inclined, to allow the balancing motion required, in order to force the gathered air into the cistern above. The width and even length of this balancing board can be varied, to answer the dimensions and construction of any cistern. The dimensions, shape and construction of bellows made on this principle of a balance, are susceptible of a great variety of different modifications; those that I have given were for the purpose of easier illustration, not the best operation, as this can be determined only by extensive experiments. With regard to the operation of bellows on this principle, it is evident from reason and the extent of my experiments, that it will be easy, steady, and regular, and susceptible of powerful exertion. Where a constant and very powerful blast is required, as in great furnaces, and for casting and hammering, it will probably answer better than in common shops. On this principle there will be no loss of motion, and whether the handle is moved upwards or downwards, it will force the same quantity of air into the cistern. To require less leather in the construction of the cistern, and still have the blast longer and equally powerful, its cover may be made so small, that it will sink as far below the fixed top of the cistern, as when full it would be raised above; this to a certain degree would compensate for a larger-sized cistern. To increase the pressure, the bottom of the cistern and its cover can be connected by strong spiral wires, while the blast through the pipe can be governed by a regulating screw, which can be made to close the whole aperture air-tight, or any part. Having now described the compression bellows, I will proceed to describe the exhaustion or air-pump bellows.

Air-Pump.



A, represents a cistern four feet square, made air-tight, of firm timber, which is to have the air in the inside of it, exhausted, or drawn out. *n, r,* represent two strong light valves, which are to open out on the under side of the cistern, near to the sides *a, b.* These valves must open but a little way. *u, u,* represent a strong board four feet long, two wide, and so bent in its middle, where it is moveably and strongly hung to the bottom of the cistern A, directly under the valves *n, r,* so that by alternately raising and depressing its handle *h,* it will close flat on the bottom. Two valves *c, d,* are to be hung in this board, immediately under those in the cistern, which are to open as far outwards, and then the sides of this board are to be fastened air-tight all around by leather, to the bottom of the cistern, so as to allow the balancing motion, by moving the handle *h,* upwards and downwards, and will exhaust as much by an upward, as by a downward motion. The operation of the valves in a

compression bellows, is the reverse of those in the exhaustion; the shape and dimensions are as variable. This balancing principle is applicable to water as well as air, in compressing and exhausting it. The exhaustion bellows can be applied, with very little inconvenience, to exhaust cisterns or reservoirs of any shape or size.

P. S. Since writing the above, I have tried the "principle" there explained experimentally. The air cistern was conical, five feet at top, four and a half at bottom, in diameter, and two high. The cover was four feet in diameter, and made by means of leather to play up and down in the inside of the air cistern. The balancing board or its two wings, which are hung angling together, and moveably hung to the flat bottom of the air cistern, was two feet wide, and four feet four inches long. The handle was four feet. The operation is very easy, and the blast very powerful and regular. The principle of motion is universally applicable to practice. It meets with the entire approbation of all that have seen it operate.

Alps, Nassau, Rensselaer County, N. Y., February 17, 1834.

Spontaneous Combustion.—The Lancaster (Penn.) Journal publishes the particulars of a very singular instance of spontaneous combustion, which recently took place in that city. Mr. Adam Reigart had been presented, about two years before the occurrence, with a small piece of wood, evidently cedar, which had been detached from a large piece, found in excavating the deep cut of the rail-road, at the Gap, in that county, about thirty-nine feet below the surface. This piece, weighing not more than two ounces, was broken in two, and laid upon a white pine shelf, in Mr. Reigart's counting-room. About three or four days before the discovery of the fire, Mr. Whitaker, a gentleman who resides with Mr. Reigart, on wiping the dust from the shelf with a wet cloth, took up the pieces of wood, and after having dusted the shelf, laid them as before. Three days after this it was discovered that one of the pieces had ignited, and combustion was progressing so rapidly that the shelf would have been in a few minutes on fire. On examination, a portion of one of the pieces was found reduced to ashes of a dark gray color, and from some of the outer fibres being sound, and ashes lodged in the interior, under them, it would appear that combustion had commenced, not upon the outer part of the wood, nor upon the sides which lay in contact with the shelf, but in the interior of the stick—the surrounding fibres being disintegrated by the action of the fire within, and ready to fall to pieces.

Wood set on fire by the heat of the Sun.—The Hartford (Conn.) Review states, that on Tuesday, the 5th of August, three men being at work at hay in a meadow, about one mile east of Winchester, (Conn.) about 2 o'clock P. M. they discovered, a few rods from them on a piece of barren upland, which had been cleared some seven years since, a small smoke arising; the sun shining excessively hot at the time, they were induced to go and examine it. They found the fire was just kindled, and had not commenced blazing, nor consumed any of the fuel in which it had commenced, which was the remains of an old decayed hemlock log. It immediately burst into a blaze and burned vividly; and when the writer of this saw it, more than twenty hours after, it had consumed most of the old log and mulch for more than four feet square, and was then burning. From the locality of the place, and all the other circumstances, the fire cannot be accounted for at all, but from the direct influence of the rays of the sun, which shined brighter and hotter at that time than any time previous, this season. The men who saw it, are respectable men, of the strictest integrity.

Mr. Telford's Will.—The will and codicils of the late Mr. Telford have been proved by the executors in the Prerogative Court, and the personal estate sworn to be under 35,000*l.* He bequeaths about 3,000*l.* to divers charitable institutions, and there are legacies to several persons of mechanical genius, altogether amounting to 16,000*l.* Among the rest there is 500 guineas to Robert Southey, the poet-laureate. Mr. Telford directs, that, in the event of his property not amounting to 16,000*l.*, the legatees should abate in proportion; but should it prove more than sufficient, they are to be entitled to the full benefit in proportion to the amount of property left. The amount of the legacies will, therefore, be doubled; and the laureate, instead of 500, will be entitled to 1,000 guineas.—*London Mechanics' Magazine.*

The Mariners' Compass is generally stated to have been invented by one Flavio Gioia, a native of Amalfi, in 1302 or 1303. But from a letter on the subject, addressed to Baron H. A. Humboldt, by Mr. J. Klaproth, reviewed in the *Athenæum* of Saturday last, (No. 369,) it appears very clearly that the magnet's polarity was popularly known in Europe at least a century earlier, and in China as far back as authentic history reaches. "A remarkable proof," says the reviewer, "of the Chinese claims to this invention, is to be found in the history of the *magnetic chariots*, whose origin is lost in the obscurity of the mythological ages." * * A (human) "figure, in front of the chariot was made of some light material; it was fixed upon a pivot, and its finger invariably pointed to the south, which was the kibleh or sacred point of the Chinese, to which they always turned when performing their devotions. It is intimated, rather obscurely, that these magnetic chariots were first invented for a religious purpose, namely, to enable the devout to discover their *kibleh* when the sun and stars were obscured by clouds—a purpose for which the compass is frequently applied in the present day by Mohammedan nations; but there are very full descriptions of the use made of these chariots in directing the march of armies, and guiding ambassadors. * * As our readers have probably anticipated, a magnetized bar passes through the arm of the finger, and the only variety of ingenuity displayed by the architects was in balancing the finger upon its pivot. The antiquity of these magnetic chariots is established incontrovertibly; the step from them to the compass is so very easy, that we may safely assert that the one must have led immediately to the other."—*Ib.*

Change in the Color of Chameleons.—In a paper on this subject in the *Edin. Phil. Jour.*, by H. M. Edwards, Esq., after narrating a course of experiments upon two chameleons, by observation during life, and dissection after death, he comes to the following conclusions: "1st. That the change in the color of chameleons does not depend essentially either on the more or less considerable swelling of their bodies, or the changes which might hence result on the condition of their blood, or of their circulation; nor does it depend on the greater or less distance which may exist between the several cutaneous tubercles, (the opinions of several naturalists;) although it is not to be denied that these circumstances probably exercise some influence upon the phenomenon. 2dly. That there exists in the skin of these animals two layers of membraneous pigment, placed the one above the other, but arranged in such a way as to appear simultaneously under the scarf-skin, and sometimes so that the one may conceal the other. 3dly. That every thing remarkable in the changes of color which manifest themselves in the chameleon, may be explained by the appearance of the pigment of the deeper layer, to an extent more or less considerable in the midst of the pigment of the superficial layer, or from its disappearance underneath this layer. 4thly. That these displacements of the deeper pigment can in reality occur; and it is probably a consequence of them that the chameleon's color changes during life, and may continue to change even after death. 5thly. That there exists a close analogy between the mechanism by the help of which the changes of color appear to take place in these reptiles, and that which determines the successive appearance and disappearance of colored spots in the mantles of several of the cephalopode mollusca."—*Ib.*

The London and Birmingham Railway Company have published notices of their intention to continue the railway to a vacant piece of ground in Euston-grove, on the north side of Drummond-street, near Euston-square.—*Ib.*

Discovery of Platina in France.—M. Villain has informed the Academy of Sciences, of a great mine of argentiferous galena; it is the mine of Mille, in the department, de Deux Sevres. Some of the samples contained twenty-two one hundred thousandths of its weight of platina, and it is calculated that the daily product of platina will amount to one pound, four ounces, two gross and twenty-eight grains.—*Scientific Tracts and Family Lyceum.*

Paying for the Palate.—Henry the Eighth rewarded the compounder of a pudding which pleased his palate, by giving him a monastery. How strangely the times have changed—a man devoted to the laborious exercise of dispensing useful knowledge, in this age, can scarcely obtain a pudding.—*Ib.*